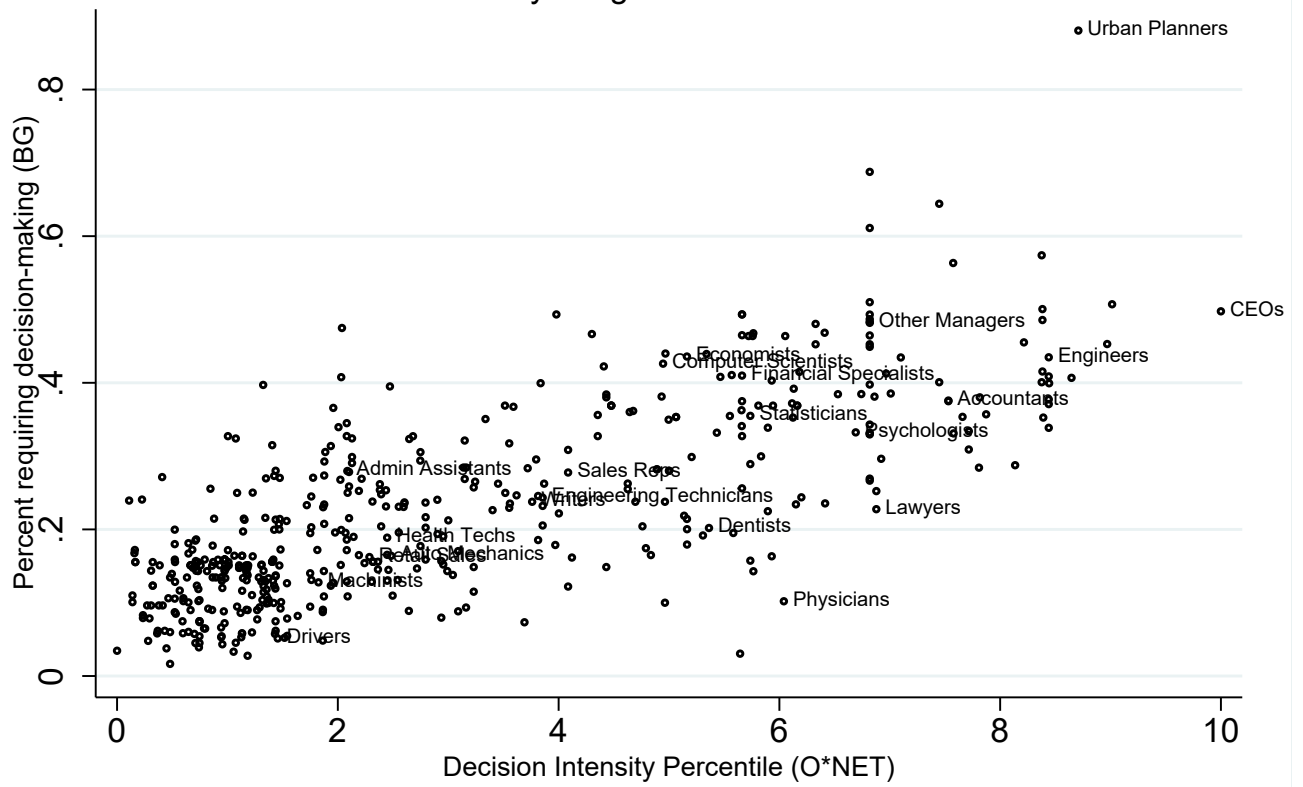


**Figure A1**

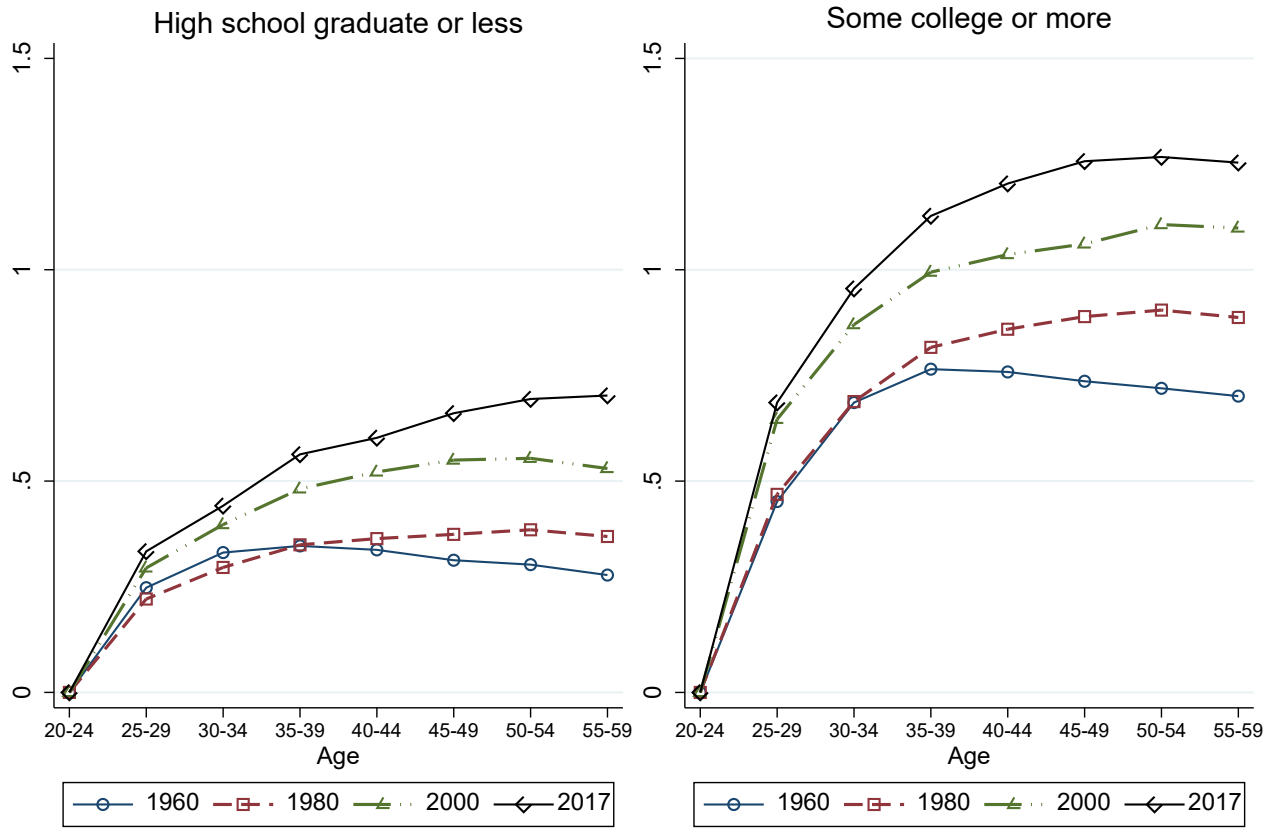
**Correlation between Burning Glass and O\*NET Decision Variables  
by 5 digit SOC codes**



*Notes:* This figure shows a scatterplot of the correlation between the percent of vacancies requiring decision-making using data from Burning Glass Technologies spanning the 2007-2019 period (vertical axis), and the decision intensity of an occupation as measured by the average of three O\*NET task variables related to decision-making (horizontal axis). See the text for detailed definitions of both variables. Each dot is an occupation, defined by five-digit Standard Occupation Classification (SOC) codes, and the labor-supply weighted correlation between measures is 0.82.

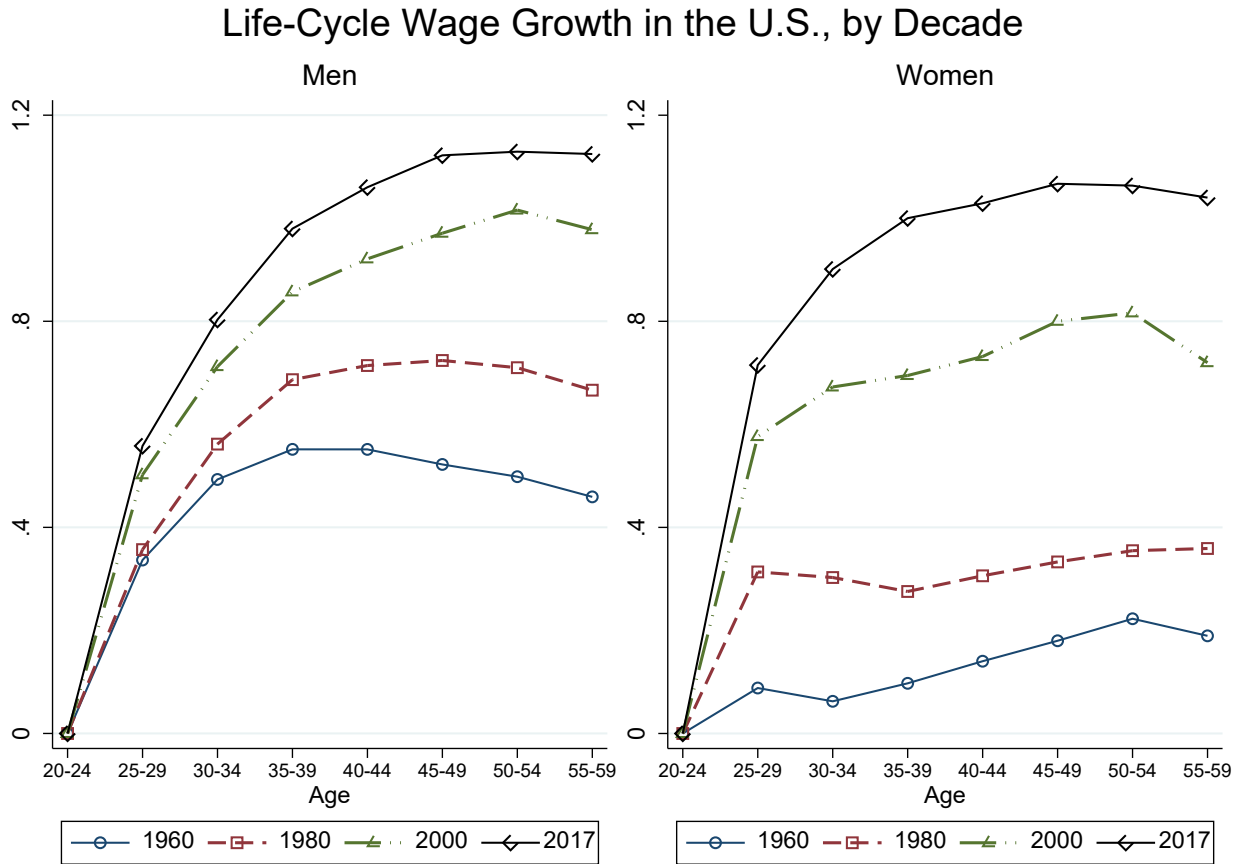
Figure A2

Life-Cycle Earnings Growth in the U.S., by Decade



Notes: This figure presents results from a labor supply-weighted regression of log annual wage and salary income on indicators for five-year age bins, controlling for year fixed effects. The sample is all full-time workers ages 20-59 in the 1960-2000 U.S. Census and pooled 3-year samples of the 2016-2018 American Community Surveys. The left panel restricts the sample to workers with a high school degree or less, and the right panel restricts the sample to workers with at least some college education or more.

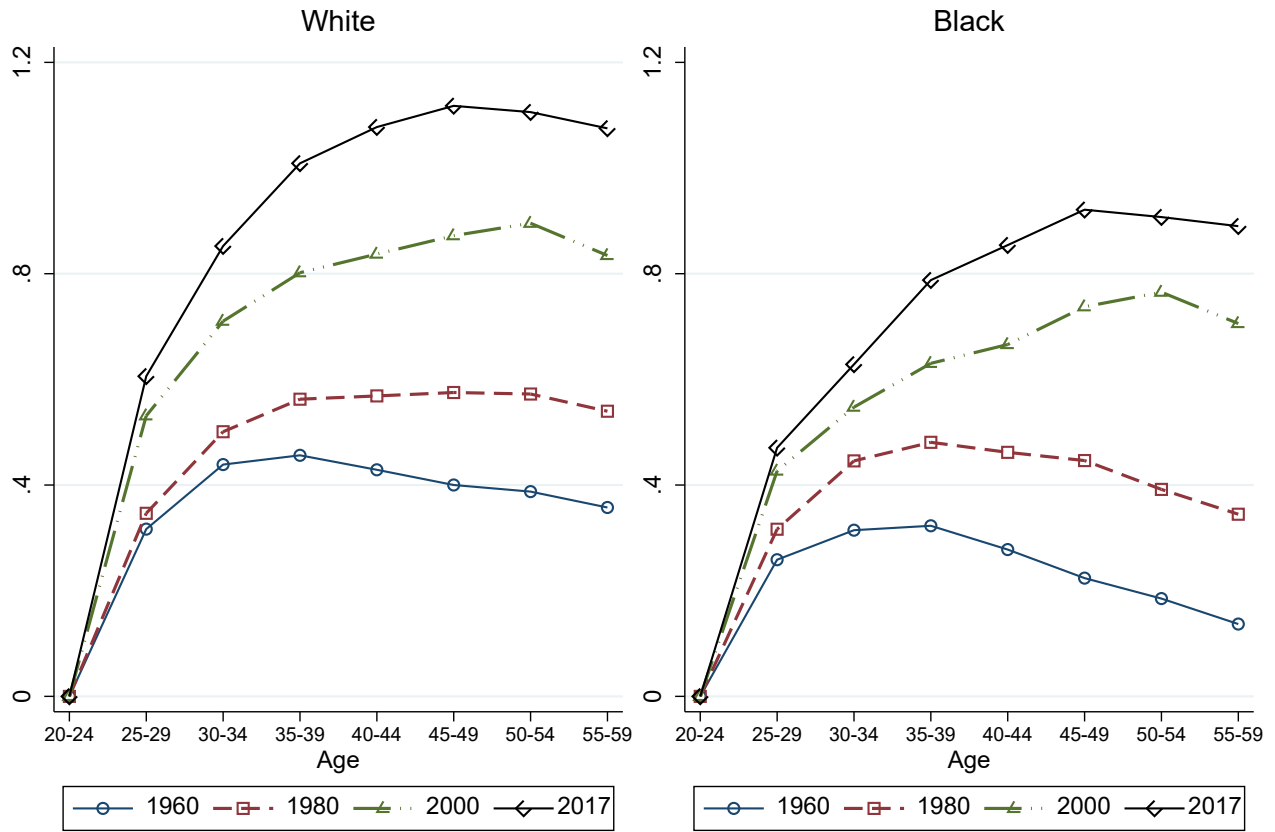
Figure A3



Notes: This figure presents results from a labor supply-weighted regression of log annual wage and salary income on indicators for five-year age bins, controlling for year fixed effects. The sample is all full-time workers ages 20-59 in the 1960-2000 U.S. Census and pooled 3-year samples of the 2016-2018 American Community Surveys. The left panel restricts the sample to male workers, and the right panel restricts the sample to female workers.

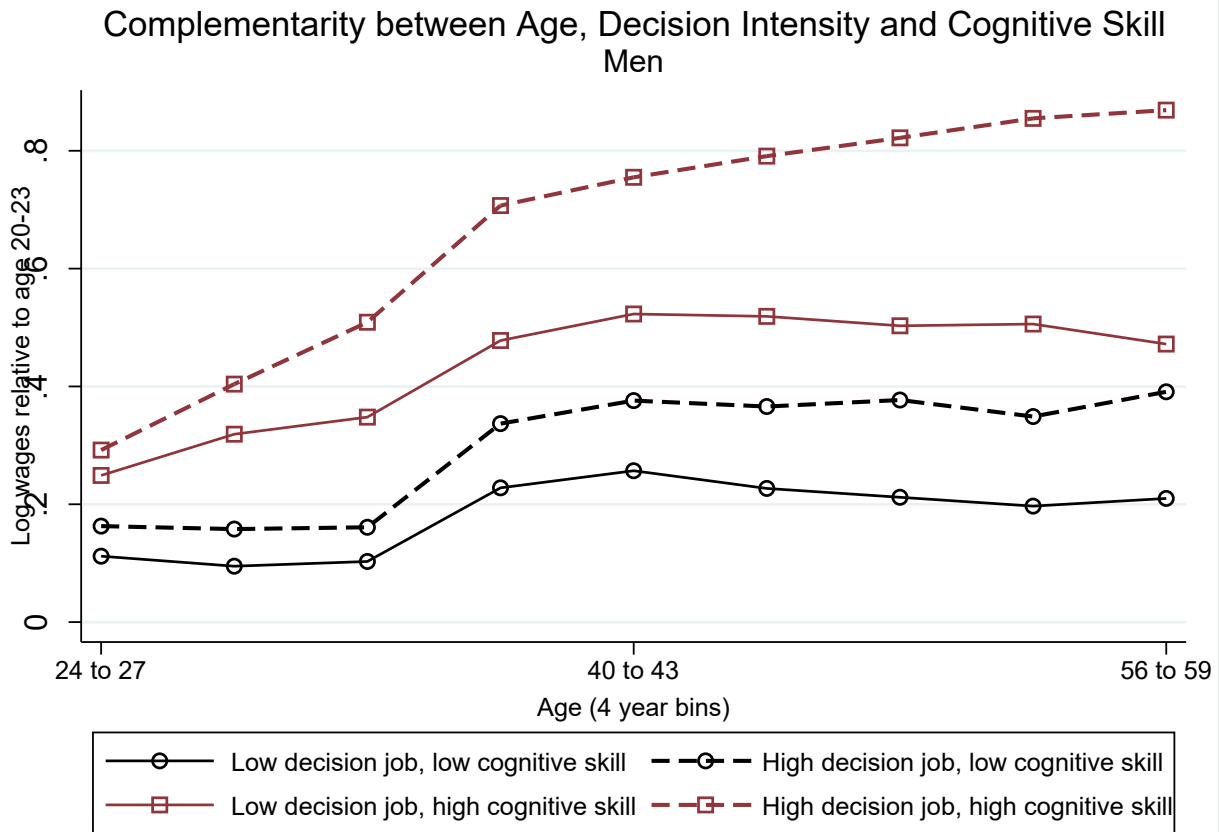
Figure A4

Life-Cycle Earnings Growth in the U.S., by Decade



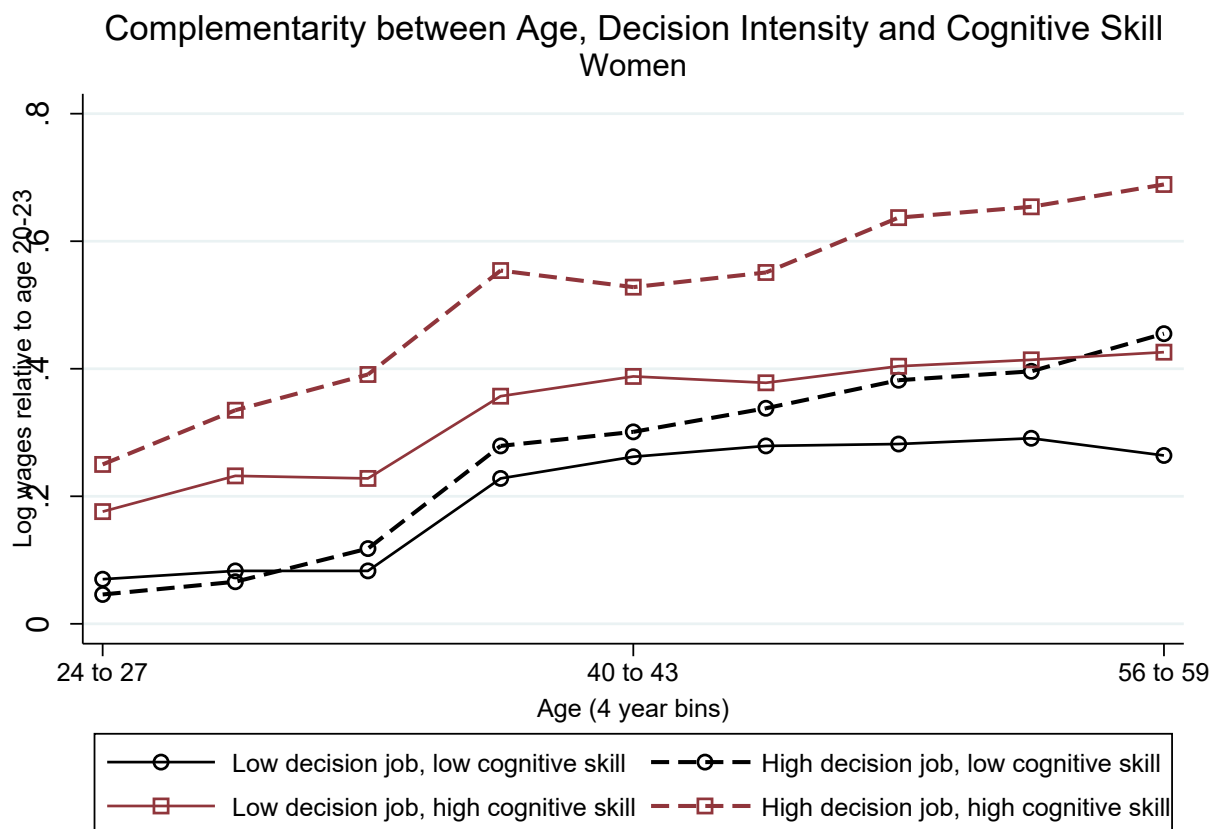
Notes: This figure presents results from a labor supply-weighted regression of log annual wage and salary income on indicators for five-year age bins, controlling for year fixed effects. The sample is all full-time workers ages 20-59 in the 1960-2000 U.S. Census and pooled 3-year samples of the 2016-2018 American Community Surveys. The left panel restricts the sample to workers who identify as white, and the right panel restricts the sample to workers who identify as African-American.

**Figure A5**



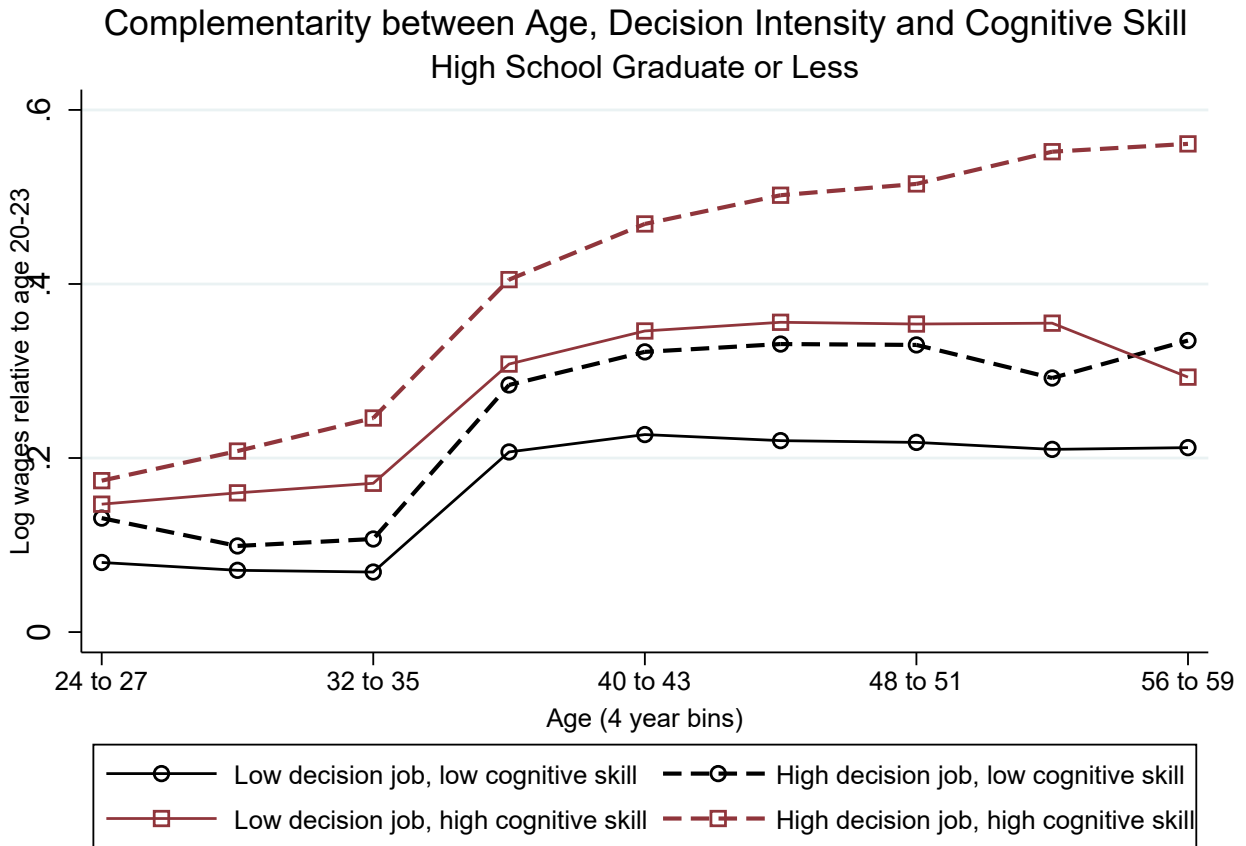
*Notes:* This figure presents implied values from the coefficients of an estimate of equation (9) in the paper, with log hourly wages regressed on interactions between age, decision intensity and cognitive skill, plus occupation, individual and year fixed effects. The figure plots implied wage growth in jobs at the 25<sup>th</sup> percentile (solid line) and 75<sup>th</sup> percentile (dashed line) of decision intensity, and for workers with cognitive skill one standard deviation below average (circles) and one standard deviation above average (squares). The sample is male youth ages 14-22 in the National Longitudinal Survey of Youth 1979 cohort. Occupations are coded consistently using the “occ1990dd” crosswalk developed by Autor and Dorn (2013) and extended by Deming (2017). Decision intensity is the average of three O\*NET task variables related to decision-making – see the text for details. All the regression coefficients - including the three-way interaction between age, decision intensity, and cognitive skill – are statistically significant at the less than one percent level.

Figure A6



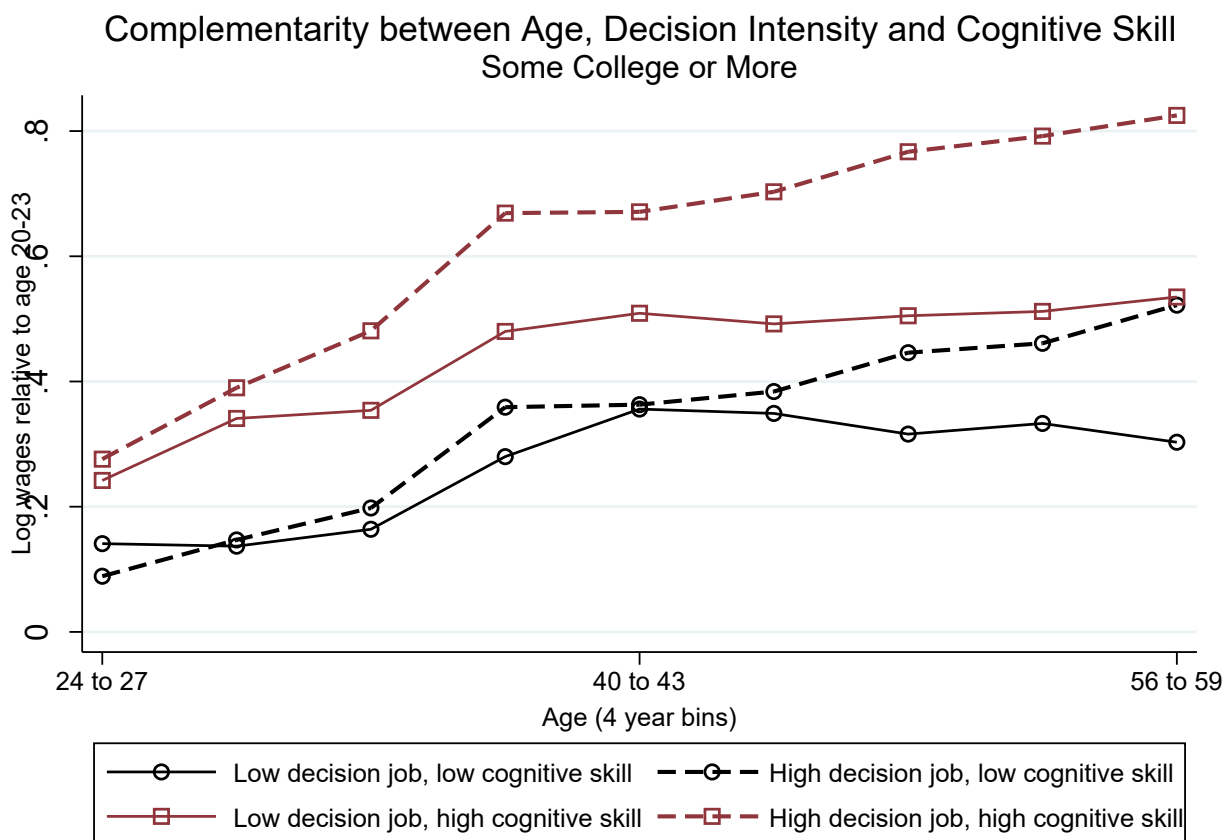
*Notes:* This figure presents implied values from the coefficients of an estimate of equation (9) in the paper, with log hourly wages regressed on interactions between age, decision intensity and cognitive skill, plus occupation, individual and year fixed effects. The figure plots implied wage growth in jobs at the 25<sup>th</sup> percentile (solid line) and 75<sup>th</sup> percentile (dashed line) of decision intensity, and for workers with cognitive skill one standard deviation below average (circles) and one standard deviation above average (squares). The sample is female youth ages 14-22 in the National Longitudinal Survey of Youth 1979 cohort. Occupations are coded consistently using the “occ1990dd” crosswalk developed by Autor and Dorn (2013) and extended by Deming (2017). Decision intensity is the average of three O\*NET task variables related to decision-making – see the text for details. All the regression coefficients - including the three-way interaction between age, decision intensity, and cognitive skill – are statistically significant at the less than one percent level.

**Figure A7**



*Notes:* This figure presents implied values from the coefficients of an estimate of equation (9) in the paper, with log hourly wages regressed on interactions between age, decision intensity and cognitive skill, plus occupation, individual and year fixed effects. The figure plots implied wage growth in jobs at the 25<sup>th</sup> percentile (solid line) and 75<sup>th</sup> percentile (dashed line) of decision intensity, and for workers with cognitive skill one standard deviation below average (circles) and one standard deviation above average (squares). The sample is respondents in the National Longitudinal Survey of Youth 1979 cohort who have a high school degree or less. Occupations are coded consistently using the “occ1990dd” crosswalk developed by Autor and Dorn (2013) and extended by Deming (2017). Decision intensity is the average of three O\*NET task variables related to decision-making – see the text for details. All the regression coefficients - including the three-way interaction between age, decision intensity, and cognitive skill – are statistically significant at the less than one percent level.

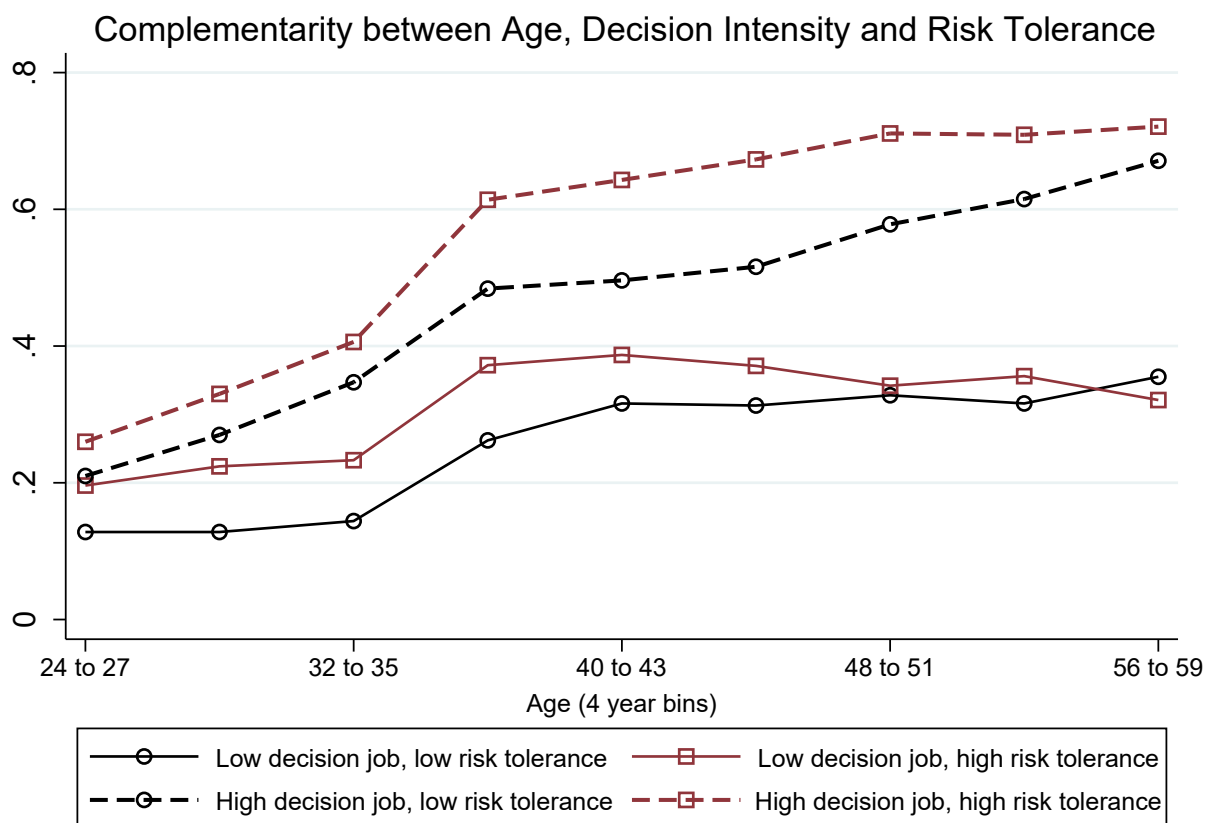
**Figure A8**



*Notes:* This figure presents implied values from the coefficients of an estimate of equation (9) in the paper, with log hourly wages regressed on interactions between age, decision intensity and cognitive skill, plus occupation, individual and year fixed effects. The figure plots implied wage growth in jobs at the 25<sup>th</sup> percentile (solid line) and 75<sup>th</sup> percentile (dashed line) of decision intensity, and for workers with cognitive skill one standard deviation below average (circles) and one standard deviation above average (squares). The sample is respondents in the National Longitudinal Survey of Youth 1979 cohort who have some college education or more. Occupations are coded consistently using the “occ1990dd” crosswalk developed by Autor and Dorn (2013) and extended by Deming (2017). Decision intensity is the average of three O\*NET task variables related to decision-making – see the text for details. All the regression coefficients - including the three-way interaction between age, decision intensity, and cognitive skill – are statistically significant at the less than one percent level.



**Figure A9**



*Notes:* This figure presents implied values from the coefficients of an estimate of equation (9) in the paper, with log hourly wages regressed on interactions between age, decision intensity and risk tolerance, plus occupation, individual and year fixed effects. The figure plots implied wage growth in jobs at the 25<sup>th</sup> percentile (solid line) and 75<sup>th</sup> percentile (dashed line) of decision intensity, and for workers with cognitive skill one standard deviation below average (circles) and one standard deviation above average (squares). The sample is all respondents in the National Longitudinal Survey of Youth 1979 cohort. Occupations are coded consistently using the “occ1990dd” crosswalk developed by Autor and Dorn (2013) and extended by Deming (2017). Decision intensity is the average of three O\*NET task variables related to decision-making, and risk tolerance is a categorical variable where 0/1/2 are low/medium/high – see the text for details. All the regression coefficients - including the three-way interaction between age, decision intensity, and cognitive skill – are statistically significant at the less than one percent level.

**Table A1A: Decision Intensity by Occupation (first third)**

<b>SOC Code</b>	<b>Occupation Category</b>	<b>Decision Intensity (O*NET)</b>	<b>Employment Share</b>	<b>Share with BA</b>	<b>Wage and Salary Income</b>
111	Top Executives and Managers	9.69	0.015	0.585	133,957
112	Advertising, PR, Sales Managers	8.20	0.007	0.718	103,020
113	Operations Specialties Managers	7.39	0.021	0.598	98,987
119	Other Managers	6.52	0.062	0.525	77,320
131	Business Operations Specialists	4.92	0.034	0.644	75,335
132	Financial Specialists	5.30	0.023	0.771	86,446
151	Computer Occupations	5.70	0.032	0.679	88,544
152	Mathematical Science Occupations	6.26	0.002	0.820	93,271
171	Architects and Surveyors	5.58	0.002	0.865	80,826
172	Engineers	7.15	0.014	0.814	96,256
173	Drafters and Engineering Technicians	3.82	0.004	0.221	56,914
191	Life Scientists	6.55	0.002	0.988	83,003
192	Physical Scientists	6.09	0.003	0.983	84,971
193	Social Scientists and Related	6.03	0.002	0.977	73,488
194	Life/Phys/Soc Science Technicians	3.05	0.002	0.394	48,223
211	Counselors and Social Workers	5.59	0.014	0.761	46,043
212	Religious Workers	5.75	0.003	0.718	44,684
231	Lawyers and Judges	6.17	0.007	0.981	149,559
232	Legal Support Workers	4.18	0.004	0.464	54,432
251	Postsecondary Teachers	5.47	0.008	0.924	68,043
252	K-12 Teachers	5.42	0.035	0.884	48,829
253	Other Teachers and Instructors	7.01	0.005	0.529	32,632
254	Librarians and Archivists	5.17	0.002	0.754	44,739
259	Other Education Occupations	5.40	0.008	0.326	25,682
271	Art and Design Workers	3.58	0.007	0.606	50,042
272	Entertainers and Performers	4.29	0.004	0.555	44,240
273	Media and Communications Workers	3.66	0.006	0.743	58,369
274	Media/Comms Equipment Workers	3.74	0.002	0.503	38,081
291	Healthcare Practitioners	5.57	0.043	0.771	95,494
292	Health Technologists	3.14	0.020	0.213	45,288
299	Other Healthcare Occupations	4.00	0.001	0.700	55,569

*Notes:* This table uses data from the 2018 American Community Survey (ACS) to compute decision intensity, employment shares, and the labor supply-weighted share of workers with a bachelor's degree and mean wage and salary income by three digit Standard Occupation Classification (SOC) codes. Decision intensity is the average of three O\*NET task variables related to decision-making and is normalized to a 0 to 10 scale, where 5 represents the decision intensity of the median job in 2018 - see the text for details.

**Table A1B: Decision Intensity by Occupation (second third)**

SOC Code	Occupation Category	Decision Intensity (O*NET)	Employment Share	Share with BA	Wage and Salary Income
311	Home Health and Personal Care Aides	2.36	0.021	0.104	24,605
312	Occ and Physical Therapy Aides	3.88	0.001	0.267	36,798
319	Other Healthcare Aides	1.86	0.010	0.159	30,597
331	Supervisors, Protective Services	5.31	0.002	0.378	76,478
332	Firefighting and Prevention Workers	3.26	0.002	0.222	69,683
333	Law Enforcement Workers	3.51	0.009	0.336	64,710
339	Other Protective Service Workers	2.76	0.008	0.196	35,942
351	Supervisors, Food Prep Workers	3.52	0.007	0.136	32,298
352	Cooks and Food Prep Workers	1.83	0.020	0.061	19,846
353	Food and Beverage Serving Workers	1.16	0.020	0.130	20,917
359	Other Food Prep and Service Jobs	1.97	0.005	0.068	15,727
371	Supervisors, Grounds Cleaning/Maintenance	3.70	0.003	0.155	37,785
372	Building Cleaning and Pest Control	1.66	0.026	0.060	23,467
373	Grounds Maintenance Workers	1.69	0.008	0.070	22,721
391	Supervisors, Personal Care and Services	4.80	0.001	0.230	33,722
392	Animal Care and Service Workers	3.64	0.002	0.222	20,159
393	Entertainment Attendants	1.63	0.002	0.198	24,897
394	Funeral Service Workers	1.37	0.000	0.305	46,834
395	Personal Appearance Workers	2.01	0.009	0.082	19,252
396	Baggage Porters and Bellhops	2.38	0.001	0.164	32,666
399	Other Personal Care and Service Workers	4.46	0.012	0.246	17,549
411	Supervisors, Sales Workers	5.05	0.030	0.309	58,888
412	Retail Sales Workers	1.76	0.038	0.154	26,265
413	Sales Representatives, Services	4.90	0.011	0.542	87,290
414	Sales Representatives, Wholesale and Mfg	3.14	0.009	0.493	81,564
419	Other Sales Workers	3.67	0.009	0.462	56,331
431	Supervisors, Office and Admin Support	5.41	0.009	0.377	59,518
432	Communications Equipment Operators	1.05	0.000	0.214	35,297
433	Financial Clerks	2.31	0.017	0.241	41,745
434	Information and Records Clerks	2.15	0.036	0.242	34,138
435	Scheduling and Dispatching Workers	1.80	0.014	0.165	42,404
436	Secretaries and Administrative Assistants	2.75	0.018	0.253	37,871
439	Other Office and Admin Support Workers	1.83	0.018	0.273	36,159

Notes: This table uses data from the 2018 American Community Survey (ACS) to compute decision intensity, employment shares, and the labor supply-weighted share of workers with a bachelor's degree and mean wage and salary income by three digit Standard Occupation Classification (SOC) codes. Decision intensity is the average of three O\*NET task variables related to decision-making and is normalized to a 0 to 10 scale, where 5 represents the decision intensity of the median job in 2018 - see the text for details.

**Table A1C: Decision Intensity by Occupation (last third)**

SOC Code	Occupation Category	Decision Intensity (O*NET)	Employment Share	Share with BA	Wage and Salary Income
451	Farming, Fishing, and Forestry Workers	4.05	0.000	0.177	45,489
452	Agricultural Workers	2.74	0.005	0.075	26,141
453	Fishing and Hunting Workers	2.65	0.000	0.108	22,900
454	Forestry and Logging Workers	1.89	0.000	0.075	29,201
471	Supervisors, Construction and Extraction	4.19	0.006	0.114	62,880
472	Construction Trade Workers	1.43	0.043	0.054	37,799
473	Helpers, Construction Trades	1.13	0.000	0.053	27,383
474	Other Construction Workers	1.81	0.002	0.120	47,356
475	Extraction Workers	1.58	0.001	0.062	60,422
491	Supervisors, Installation and Repair	5.05	0.002	0.154	67,715
492	Electrical and Electronic Equipment Repair	2.12	0.003	0.161	48,493
493	Vehicle and Mobile Equipment Repair	1.99	0.013	0.047	43,277
499	Other Install, Maintenance and Repair Work	1.89	0.014	0.079	49,873
511	Supervisors, Production	4.43	0.006	0.178	62,469
512	Assemblers and Fabricators	1.94	0.008	0.061	35,538
513	Food Processing Workers	1.33	0.005	0.073	30,278
514	Metal and Plastics Workers	1.56	0.011	0.039	43,941
515	Printing Workers	1.54	0.001	0.116	37,448
516	Textile Workers	1.32	0.003	0.073	24,752
517	Woodworkers	1.95	0.001	0.083	31,483
518	Plant and System Operators	2.19	0.002	0.174	67,048
519	Other Production Occupations	1.48	0.021	0.112	40,494
531	Supervisors, Transport and Material Moving	4.25	0.002	0.162	52,711
532	Air Transportation Workers	4.83	0.002	0.625	103,952
533	Motor Vehicle Operators	1.65	0.031	0.082	38,411
534	Rail Transportation Workers	1.73	0.001	0.140	73,035
535	Water Transportation Workers	2.68	0.000	0.176	65,857
536	Other Transportation Workers	2.59	0.002	0.101	35,193
537	Material Moving Workers	1.06	0.037	0.065	29,349

*Notes:* This table uses data from the 2018 American Community Survey (ACS) to compute decision intensity, employment shares, and the labor supply-weighted share of workers with a bachelor's degree and mean wage and salary income by three digit Standard Occupation Classification (SOC) codes. Decision intensity is the average of three O\*NET task variables related to decision-making and is normalized to a 0 to 10 scale, where 5 represents the decision intensity of the median job in 2018 - see the text for details.

**Table A2: Heterogeneity in Relative Return to Decision-Intensity with Age**

	20 to 23	24 to 27	28 to 31	32 to 35	36 to 39	40 to 43	44 to 47	48 to 51	52 to 55	56 to 59
High School or Less	-0.004	0.011	0.011	0.016	0.024	0.030	0.034	0.038	0.038	0.048
	[0.016]	[0.015]	[0.015]	[0.015]	[0.015]	[0.015]	[0.015]	[0.015]	[0.016]	[0.019]
Some College or More	0.014	0.025	0.034	0.052	0.067	0.057	0.067	0.083	0.086	0.093
	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	[0.007]
Male	-0.004	0.019	0.039	0.047	0.062	0.054	0.059	0.075	0.075	0.088
	[0.011]	[0.011]	[0.011]	[0.011]	[0.011]	[0.011]	[0.011]	[0.011]	[0.011]	[0.012]
Female	-0.021	0.003	0.020	0.036	0.053	0.057	0.066	0.078	0.084	0.090
	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.008]
White	0.004	0.023	0.033	0.051	0.060	0.061	0.064	0.079	0.081	0.090
	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.008]
Black	-0.025	-0.001	0.013	0.023	0.031	0.023	0.036	0.049	0.050	0.049
	[0.016]	[0.016]	[0.016]	[0.016]	[0.016]	[0.016]	[0.016]	[0.016]	[0.016]	[0.016]
Professional Occs	0.028	0.030	0.028	0.038	0.050	0.060	0.065	0.070	0.064	0.070
	[0.008]	[0.007]	[0.007]	[0.007]	[0.008]	[0.008]	[0.008]	[0.007]	[0.008]	[0.011]
Non-Professional Occs	-0.028	0.000	0.011	0.230	0.030	0.037	0.039	0.046	0.042	0.042
	[0.004]	[0.004]	[0.004]	[0.004]	[0.005]	[0.005]	[0.005]	[0.006]	[0.006]	[0.011]
Add Tenure Controls	0.005	0.025	0.036	0.050	0.061	0.056	0.063	0.076	0.079	0.088
	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	[0.006]
Decision * Age	0.024	0.034	0.049	0.060	0.070	0.065	0.072	0.085	0.088	0.096
	[0.020]	[0.020]	[0.020]	[0.020]	[0.020]	[0.020]	[0.020]	[0.020]	[0.020]	[0.021]
Math * Age	-0.046	-0.028	-0.032	-0.024	-0.021	-0.019	-0.018	-0.017	-0.014	-0.015
	[0.036]	[0.036]	[0.036]	[0.036]	[0.036]	[0.036]	[0.036]	[0.036]	[0.036]	[0.037]

*Notes:* The table presents estimates of a version of equation (9) in the paper, where the natural log of real hourly wages is regressed on interactions with age and the decision intensity of a worker's occupation, plus individual and occupation fixed effects. The sample is comprised of youth ages 14-22 in 1979, and follows them through 2017. The first eight rows are separate estimates, with the sample restricted as indicated in the table. Row 9 adds controls for employer tenure to the standard model estimated in equation (9). Rows 10 and 11 show the coefficients from a modified estimate of equation (9) that also adds interactions between age and the nonroutine analytical (or math) intensity of the occupation, following Autor, Levy and Murnane (2003) and Deming (2017). Decision intensity is the average of three O\*NET task variables related to decision-making - see the text for details. Standard errors are in brackets and are clustered at the individual level.

**Table A3: Selection into Decision-Intensive Occupations by NLS Cohort**

	(1)	(2)
Age * NLS 66	0.070	0.075
	[0.002]	[0.002]
Age * NLSY79	0.076	0.075
	[0.002]	[0.001]
Age * NLSY97	0.094	0.095
	[0.0002]	[0.002]
Age * Cog * NLS 66		0.019
		[0.002]
Age * Cog * NLSY79		0.031
		[0.001]
Age * Cog * NLSY97		0.043
		[0.002]
F (age) terms	0.000	0.000
F ( cog * age) terms		0.000

*Notes:* Each column presents estimates of a version of equation (9) in the paper, where the decision intensity of a worker's occupation is regressed on interactions with age, normalized IQ (NLS 66) or AFQT (NLSY79 and NLSY97) scores, and an indicator for survey cohort, plus individual fixed effects. The sample is comprised of three different cohorts of youth ages 14-22 in 1966, 1979 and 1997. I restrict the age range to 20-40 to keep the sample consistent across survey waves. Decision intensity is the average of three O\*NET task variables related to decision-making - see the text for details. Standard errors are in brackets and are clustered at the individual level.

**Table A4: Returns to Education in Decision-Intensive Occupations**

	(1)	(2)	(3)
Age	-0.0190	-0.0129	-0.0124
	[0.0010]	[0.0010]	[0.0020]
Age * Education	0.0024	0.0017	0.0017
	[0.0001]	[0.0001]	[0.0001]
Age * Decision		0.0011	0.0010
		[0.0001]	[0.0005]
Decision		-0.0974	-0.0933
		[0.0092]	[0.0172]
Decision * Education		0.0070	0.0067
		[0.0004]	[0.0012]
Age * Decision * Education			0.0000
			[0.0004]

*Notes:* Each column presents estimates of a version of equation (9) in the paper, where the natural log of real hourly wages is regressed on interactions with age, the decision intensity of a worker's occupation, years of completed education, and individual and occupation fixed effects. See the text for details. The sample is comprised of youth ages 14-22 in 1979, and follows them through 2017. Decision intensity is the average of three O\*NET task variables related to decision-making - see the text for details. Standard errors are in brackets and are clustered at the individual level.

**Table A5: Returns to Education and Decision Intensity by NLS Cohort**

	(1)	(2)	(3)
Age * Education * NLS 66	0.0038 [0.0002]	0.0033 [0.0002]	0.0021 [0.0003]
Age * Education * NLSY79	0.0052 [0.0002]	0.0044 [0.0002]	0.0033 [0.0002]
Age * Education * NLSY97	0.0065 [0.0002]	0.0054 [0.0002]	0.0042 [0.0002]
Age * Decision * NLS 66		0.0001 [0.0002]	-0.0027 [0.0004]
Age * Decision * NLSY79		0.0011 [0.0002]	-0.0012 [0.0002]
Age * Decision * NLSY97		0.0007 [0.0003]	-0.0020 [0.0004]
Age * Decision * Educ * NLS 66			0.00023 [0.00002]
Age * Decision * Educ * NLSY79			0.00018 [0.00001]
Age * Decision * Educ * NLSY97			0.00020 [0.00002]
F (educ * age) terms	0.0000	0.0000	0.0000
F (decision * age) terms		0.0001	0.0024
F (decision * educ * age) terms			0.2211

*Notes:* Each column presents estimates of a version of equation (9) in the paper, where the natural log of real hourly wages is regressed on interactions with age, the decision intensity of a worker's occupation, years of completed education, an indicator for survey cohort, plus individual and occupation fixed effects. The coefficients on age and decision intensity are suppressed to conserve space. The sample is comprised of three different cohorts of youth ages 14-22 in 1966, 1979 and 1997. I restrict the age range to 20-40 to keep the sample consistent across survey waves. Decision intensity is the average of three O\*NET task variables related to decision-making - see the text for details. Standard errors are in brackets and are clustered at the individual level.



**Table A6: Selection into Decision-Intensive Occupations by NLS Cohort based on education**

	(1)	(2)
Age * NLS 66	0.070 [0.002]	-0.064 [0.009]
Age * NLSY79	0.076 [0.002]	-0.130 [0.007]
Age * NLSY97	0.094 [0.0002]	-0.159 [0.009]
Age * Educ * NLS 66		0.010 [0.001]
Age * Educ * NLSY79		0.015 [0.001]
Age * Educ * NLSY97		0.018 [0.002]
F (age) terms	0.000	0.000
F (educ * age) terms		0.000

*Notes:* Each column presents estimates of a version of equation (9) in the paper, where the decision intensity of a worker's occupation is regressed on interactions with age, years of completed education, an indicator for survey cohort and individual fixed effects. The sample is comprised of three different cohorts of youth ages 14-22 in 1966, 1979 and 1997. I restrict the age range to 20-40 to keep the sample consistent across survey waves. Decision intensity is the average of three O\*NET task variables related to decision-making - see the text for details. Standard errors are in brackets and are clustered at the individual level.